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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/519,876 | 12/30/2004 | Hiroshi Noda | 2271/73634 | 7424 |
| 23432 | 7590 | 05/19/2006 | EXAMINER | |
| COOPER & DUNHAM, LLP 1185 AVENUE OF THE AMERICAS NEW YORK, NY 10036 | | | FIDLER, SHELBY LEE | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2861 | |

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 10/519,876 | | NODA, HIROSHI | |
| | Examiner | | Art Unit | |
| | Shelby Fidler | | 2861 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/30/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asauchi et al. (US 6431676 B2).

Asauchi et al. teach the following:

***regarding claims 1, 4, and 7, an inkjet recording apparatus, comprising:**

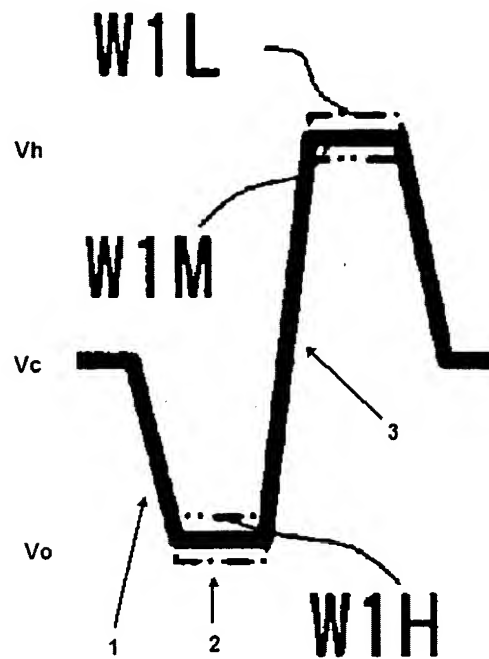
a droplet discharging head for discharging ink drops (print head 50A, Fig. 16) and having a pressurizing compartment (inherent to piezoelectric printing operation described in col. 8, lines 47-51);

drive waveform generating means (drive waveform generation circuit 46B, Fig. 16) for outputting a drive pulse (e.g. COM1, Fig. 17A) that includes at least a first waveform element for expanding a volume of the pressurizing compartment of the droplet discharging head (element 1, Drawing 1: see below), a second waveform element for maintaining an expanded state of the volume of the pressurizing compartment caused by the first waveform element (element 2, Drawing 1), and a third waveform element for contracting the volume of the pressurizing compartment in the expanded state so that ink drops are discharged from the pressurizing compartment (element 3, Drawing 1);

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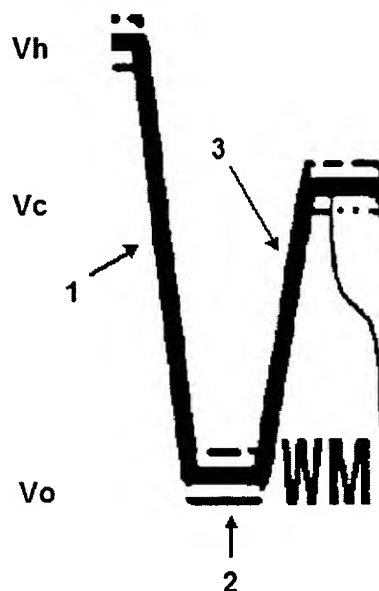
temperature detecting means for detecting environmental temperature (temperature sensor 48, Fig. 16); and

means (controller 45A, Fig. 16 & col. 12, lines 46-49) for decreasing a difference between first and second potential differences when the environmental temperature is higher than a first predetermined temperature (col. 12, lines 63-64 read with elements W1H, Fig. 17A), and increasing the difference between the first and second potential differences when the environmental temperature is lower than a second predetermined temperature (col. 12, lines 64-65 read with W1L, Fig. 17A), the first potential difference being a potential difference between the first waveform element at the beginning of expansion of the volume of the pressurizing compartment and the second waveform element (e.g. V_c-V_o , Drawing 1), and the second potential difference being a potential difference between the third waveform element at the end of contraction of the volume of the pressurizing compartment and the second waveform element (e.g. V_h-V_o , Drawing 1)



Drawing 1: Fig. 17A from Asauchi et al. '676, edited for clarification

*regarding claims 2, 5, and 8, the drive waveform generating means generates and outputs a drive waveform (e.g. COM2, Fig. 8B) having the first potential difference greater than the second potential difference ($[V_h - V_o] > [V_c - V_o]$, Drawing 2), and varies a potential of the first waveform element according to environmental temperature (col. 13, lines 6-13)



Drawing 2: Small dot formation pulse, T_e , from Fig. 17B from Asauchi et al. '676, edited for clarification

***regarding claims 3, 6, and 9**, the drive waveform generating means generates and outputs a drive waveform (e.g. COM1, Fig. 17A) having the second potential difference greater than the first potential difference ($[V_h - V_o] > [V_c - V_o]$, Drawing 1), and the third waveform element is varied according to the environmental temperature (the potential of element 3 is changed by using the correction waveforms W1H or W1L, Drawing 1)

Asauchi et al. do not expressly teach the following:

***regarding claims 1, 4, and 7**, the first waveform element expands a volume of the pressurizing compartment of the droplet discharging head; the second waveform element maintains an expanded state of the volume of the pressurizing compartment caused by the first waveform element; and the third waveform element contracts the volume of the pressurizing

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compartment in the expanded state so that ink drops are discharged from the pressurizing compartment

At the time of invention, it would have been obvious to a person of ordinary skill in the art that the first waveform element expands a volume of the pressurizing compartment of the droplet discharging head; the second waveform element maintains an expanded state of the volume of the pressurizing compartment caused by the first waveform element; and the third waveform element contracts the volume of the pressurizing compartment in the expanded state so that ink drops are discharged from the pressurizing compartment. Iwamura et al. (US 6467865 B1) teaches that the first waveform element expands a volume of the pressurizing compartment of the droplet discharging head; the second waveform element maintains an expanded state of the volume of the pressurizing compartment caused by the first waveform element; and the third waveform element contracts the volume of the pressurizing compartment in the expanded state so that ink drops are discharged from the pressurizing compartment.

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Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on MWF 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SLF 5/8/06

SLF

K. Figgins 5/04
K. FEGGINS
PRIMARY EXAMINER